WHAT IS CLAIMED IS:

1. A current-to-voltage converting apparatus connected to an element or a circuit having a first terminal connected to a signal source, wherein said current-to-voltage converting apparatus comprises:

a feedback amplifier, which is connected to a second terminal of said element or said circuit and keeps said second terminal at virtual ground, and which converts the current signals that flow to said element or said circuit to voltage signals and outputs these signals,

means for opening the feedback loop of said feedback amplifier and measuring the open-loop loss of said feedback loop, and

a compensating amplifier, which compensates for said open-loop loss.

2. The current-to-voltage converting apparatus according to claim 1, further comprising:

means for measuring the open-loop phase shift of said feedback loop when said feedback loop is open; and

control means for keeping said open-loop phase shift at a pre-determined value.

3. The current-to-voltage converting apparatus according to claim 1, wherein said feedback loop is open or the open-loop loss of said

feedback loop is measured, the output of said signal source is controlled so that it becomes zero or a direct-current signal.

4. The current-to-voltage converting apparatus according to claim 1, wherein said feedback amplifier comprises a modulation-type narrow-band amplifier, and said narrow-band amplifier comprises a quadrature detector, filters, and a vector modulator.

5. The current-to-voltage converting apparatus according to claim 4, wherein said compensating amplifier is placed in between said quadrature detector and said vector modulator.

6. The current-to-voltage converting apparatus according to claim 4, wherein said control means controls the phase difference between the signal that is applied to said quadrature detector and the signal that is applied to said vector modulator.

7. The current-to-voltage converting apparatus according to claim 4, wherein said feedback loop is opened by being opened in between said quadrature detector and said vector modulator.

8. The current-to-voltage converting apparatus according to claim 4, wherein said feedback amplifier also comprises a null detector and feedback circuit,

said null detector is connected to said second terminal and the signals that are input to said null detector are converted to voltage signals by the null detector,

said narrow-band amplifier resolves said converted voltage signal into an in-phase component and an quadrature-phase component using said quadrature detector, filters said in-phase component and said quadrature-phase component using said respective filters, vector modulates said filtered in-phase component and said filtered quadrature-phase component using said vector modulator, and outputs the vector voltage signals, and

said feedback circuit inputs said vector signals to said null detector.

9. The current-to-voltage converter apparatus according to claim 1, wherein said element or said circuit is a capacitive element or capacitive circuit.

10. An impedance measuring apparatus which comprises:

a signal source connected to a first terminal of a device under test,

a feedback amplifier, which is connected to a second terminal of said device under test and keeps said second terminal at virtual ground,

and which converts current signals that flow to said device under test to voltage signals and outputs these signals,

means for opening the feedback loop of said feedback amplifier and measuring the open-loop loss of said feedback loop,

a compensating amplifier, which compensates said open-loop loss, and

means for measuring the vector voltage ratio between the voltage signals between said first terminal and said second terminal and the output signals of said feedback amplifier,

whereby it measures the impedance of said device under test from said vector voltage ratio.

11. The impedance measuring apparatus according to claim 10, further comprising:

means for measuring the open-loop phase shift of said feedback loop when said feedback loop is open; and

control means for keeping said open-loop phase shift at a pre-determined value.

12. The impedance measuring apparatus according to claim 10, wherein said feedback loop is open or the open-loop loss of said feedback loop is measured, the output of said signal source is controlled so that it becomes zero or a direct-current signal.

13. The impedance measuring apparatus according to claim 10, wherein said feedback amplifier comprises a modulation-type narrow-band amplifier, and

said narrow-band amplifier comprises a quadrature detector, filters, and a vector modulator.

14. The impedance measuring apparatus according to claim 13, wherein said compensating amplifier is in between said quadrature detector and said vector modulator.

15. The impedance measuring apparatus according to claim 13, wherein said control means controls the phase difference between the signal that is applied to said quadrature detector and the signal that is applied to said vector modulator

16. The impedance measuring apparatus according to claim 13, wherein said feedback loop is opened by being opened in between said quadrature detector and said vector modulator.

17. The impedance measuring apparatus according to claim 13, wherein said feedback amplifier also comprises a null detector and feedback circuit,

said null detector is connected to said second terminal and the signals that are input to the null detector are converted to voltage signals by the null detector,

said narrow-band amplifier resolves said converted voltage signal into an in-phase component and an quadrature-phase component using said quadrature detector, filters said in-phase component and said quadrature-phase component using said respective filters, vector modulates said filtered in-phase component and said filtered quadrature-phase component using said vector modulator, and outputs the vector voltage signals, and

said feedback circuit inputs said vector signals to said null detector.

18. The impedance measuring apparatus in claim 10, wherein said element or said circuit is a capacitive element or capacitive circuit.